

Notice of Allowability**Application No.**

10/580,823

Applicant(s)

IIDA, SACHIO

Examiner

KABIR A. TIMORY

Art Unit

2611

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/4/2010.
2. ☒ The allowed claim(s) is/are 1-6, 10 and 21.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 2/19/2010.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

/Kabir A Timory/
Examiner, Art Unit 2611

DETAILED ACTION

1. Acknowledgement is made of the amendment received on 02/04/2010.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephonic interview with Aldo Martinez on February 19, 2010.

- The claims in the application have been amended as follows:

In claims:

(1) Replace claim 1 with:

A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

frequency conversion means for converting the received multiband OFDM signal into a low-intermediate frequency signal;

an intermediate frequency filter to remove unnecessary waves in a low-intermediate frequency signal frequency-converted by said frequency conversion means, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a same characteristic and interconnected by a gyrator, a predetermined absolute value being used for a half-band frequency of a ladder-type low-pass filter as a real filter, the predetermined absolute value also being used as a center frequency of said Hilbert bandpass filter, and an integer ratio being used for an element value of a ladder-type prototype filter;

AD conversion means for AD converting a filtered low-intermediate frequency signal output by the intermediate frequency filter into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

OFDM demodulation means for demodulating the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein said OFDM demodulation means sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion.

(2) In claim 3, line 3, insert **--the--** between **“generate”** and **“low”**.

(3) In claim 4, line 4, replace **“a”** with **--the--** between **“generate”** and **“low”**.

(4) In claim 4, line 5, insert **--of--** between **“half”** and **“said”**.

(5) In claim 5, line 2, insert ~~--the--~~ between “wherein” and “AD”.

(6) In claim 5, line 3, insert ~~--signal--~~ at the end of the line.

(7) In claim 6, line 2, insert ~~--the--~~ between “wherein” and “AD”.

(8) Replace claim 10 with:

The radio communication apparatus according to Claim 1, the beginning of a reception frame includes a preamble composed of a known sequence, and there is further provided preamble detection means for detecting a preamble in a reception signal using a sequence resulting from multiplying said known preamble sequence and said low-intermediate frequency together.

(9) Replace claim 21 with:

A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

a mixer configured to convert the received multiband OFDM signal into a low-intermediate frequency signal;

an intermediate frequency filter to remove unnecessary waves in an low-intermediate frequency signal frequency-converted by the mixer, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a

same characteristic and interconnected by a gyrator, a predetermined absolute value being used for a half-band frequency of a ladder-type low-pass filter as a real filter, the predetermined absolute value also being used as a center frequency of said Hilbert bandpass filter, and an integer ratio being used for an element value of a ladder-type prototype filter;

an AD converter configured to convert a filtered low-intermediate frequency signal output by the intermediate frequency filter into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

an OFDM demodulator configured to demodulate the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein the OFDM demodulator sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion.

- The specification in the application have been amended as follows:

In specification:

(1) On page 14, delete lines 21-22.

Allowable Subject Matter

3. Claims 1-6, 10, and 21 are allowed.

4. The following is a statement of reasons for allowable subject matter:

The prior art of record, Langlais et al. does not teach or suggest an intermediate frequency filter to remove unnecessary waves in a low-intermediate frequency signal frequency-converted by said frequency conversion means, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a same characteristic and interconnected by a gyrator, a predetermined absolute value being used for a half-band frequency of a ladder-type low-pass filter as a real filter, the predetermined absolute value also being used as a center frequency of said Hilbert bandpass filter, and an integer ratio being used for an element value of a ladder-type prototype filter.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kabir A. Timory whose telephone number is 571-270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kabir A Timory/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611